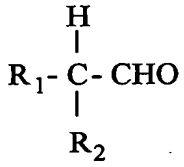
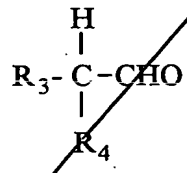
WHAT IS CLAIMED IS:

1. A process for producing a polyol by reacting an aliphatic aldehyde represented by formula (i):



(i)

wherein R_1 and R_2 each represent hydrogen atom or an aliphatic alkyl group having 1 to 6 carbon atoms, with formaldehyde in a presence of a basic catalyst, which process comprises (1) a step of concentration which comprises removing water and unreacted formaldehyde from a reaction liquid by distillation; (2) a step of extraction which comprises extracting the polyol from a concentrated reaction liquid with an extracting reagant; and (3) a step of washing with water which comprises washing an extract liquid with water and separating the liquid into an oil layer containing the polyol and an aqueous layer; wherein an aliphatic aldehyde represented by formula (ii):



(ii)

wherein R_3 represents hydrogen atom or an aliphatic alkyl group having 1 or 2 carbon atoms and R_4 represents an aliphatic alkyl group having 1 to 5 carbon atoms is used as the extracting reagent, and the extracting reagent is recovered after adjusting pH of the oil layer containing the

polyol which ~~is separated in the~~ step of washing with water.

2. A process for producing a polyol according to Claim 1, wherein pH of the oil layer is adjusted in a range of 6.0 to 9.0 in the step of washing with water.

3. A process for producing a polyol according to Claim 1, wherein the basic catalyst is used for adjusting pH in the step of washing with water.

4. A process for producing a polyol according to Claim 1, wherein, when the extracting reagent is recovered from the oil layer, the oil layer is preliminarily heated in advance and flashed into an upper stage of a distillation column.

5. A process for producing a polyol according to Claim 1, wherein the extracting reagent is recovered from the oil layer while water or steam is introduced into a bottom portion of a distillation column.

6. A process for producing a polyol according to Claim 1, wherein a same aliphatic aldehyde as the aliphatic aldehyde used as a raw material of the reaction is used as the extracting reagent and at least a portion of the recovered extracting reagent is used as the raw material.

7. A process for producing a polyol according to Claim 6, wherein the recovered extracting reagent is used in an amount such that a ratio of the amount by weight of the recovered extracting reagent to an amount by

weight of the aliphatic aldehyde freshly supplied as the raw material is in a range of 0.1 to 1.

~~8. A process for producing a polyol according to Claim 1, wherein the~~ extract liquid is washed with water using a decanter in the step of washing with water, the extracting reagent in a separated aqueous layer using a decanter is removed by distillation and water obtained from a bottom of a distillation column in the distillation is recycled to the step of concentration.

9. A process for producing a polyol according to Claim 1, wherein the extract liquid is washed with water using a decanter in the step of washing with water, the extracting reagent and a portion of water in a separated aqueous layer using a decanter are removed by distillation and a liquid obtained from a bottom of a distillation column in the distillation ~~is recycled to the step of extraction.~~

~~10.~~ A process for producing a polyol according to Claim ~~9~~, wherein the liquid obtained from the bottom of a distillation column and recycled to the step of extraction has a concentration of water in a range of 20 to 80% by weight.